

JUN 07 1976

50-269

William P. Gamill, Assistant Director for Site Technology, DSE
THRU: J. C. Stepp, Chief, Geology and Seismology Branch, DSE

SEISMIC EVENTS NEAR OCONEE PLANT

Please reference Jackson/Stepp February 11, and January 15, 1976 memorandum and Hulman January 30, 1976 memorandum, attached.

As a result of a recent passing conversation with the project manager for Oconee, I have only a small amount of new information relating to the seismicity near the Jocassee Dam. In effect, there have been no events since early March. This fact could lead to the conclusion that all stress is relieved and nothing further is expected or that a larger event is building. Since I am not a seismologist and since I have no data other than heresay, I certainly cannot make a judgment.

I do know, however, that the Jocassee Dam is designed for a .05g vertical and .1g horizontal accelerations and, if I interpret the Hulman memo correctly, its failure could flood Oconee. A magnitude 3.2 has already occurred along with a large number of smaller quakes. A magnitude 4 to 4.5 could generate such an acceleration. We have no factual data or formal reports on these events and thus this again is only heresay.

The main purpose of this memo and what distresses me is the lack of official concern for this situation. There appears to be far more scientific reasons to investigate this area than there was to require monitoring at Brunswick albeit, there is no intervention yet at Oconee. It is also distressing that most of the geologic and seismologic community as well as the public in the southeast is aware of the factual aspects relating to this activity. In fact, as far as I can see, we, as an organization responsible for the safety of these plants, are the least knowledgeable of what is going on.

Fortunately, as I am told, the applicant has approached this situation in a responsible manner and has installed a temporary monitoring network. The applicant, as I understand it, has a great deal of information with which they would provide to the staff. In light of the apparently low "g" value for these units, the limited knowledge of the geology of the site area, and the extensive awareness of the NRC's lack of concern, I believe that a seismologist should be assigned to review the entire situation. I realize that I am not

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a seismologist, but this is an obvious situation which any geoscientist would merit worthy of concern. I also believe that Branch and NRC credibility is of concern here. This is the exact situation where I believe that we should take the lead.

Robert E. Jackson, Geologist
Geology and Seismology Branch
Division of Site Safety and
Environmental Analysis

Attachment:
As stated

cc: w/attachment
H. Denton
C. Zech
R. Jackson
L. Hulman

Distribution:
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DATE →	6/1/76	6/1/76	6/3/76		

Oconee

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

FEB 11 1976

MEHSON.
Anything in depth
of events? Are they
still getting deeper?
yes
- No, they appear to
be subsiding.

William P. Gammill, Assistant Director for Site Technology, SSEA
THRU: J. C. Stepp, Chief, Geology and Seismology Branch, SSEA *J*

SEISMIC EVENTS NEAR OCONEE PLANT

Please reference January 15, 1976 memorandum for background. As per your request I called Dr. Pradeep Talwani on February 4, 1976 to discuss any new information that he may have acquired since the conversation I had with him on January 14, 1976.

He indicated that two events had been recorded since that time.

- . On January 13, 1976 a felt earthquake of magnitude 2.5 was recorded.
- . On January 16, 1976 an earthquake of magnitude 2.1 was recorded. He stated that this was probably an aftershock of the January 13th event.

Dr. Talwani indicated that the epicenters grouped into three clusters, one south of the lake, one in the lake, and one north of the lake, and that the trend of this alignment would orient N10-15°E to NE-SW. He also stated that such a trend passes slightly to the west of the dam.

He also indicated that he had several strong motion instruments installed on the dam and they tripped during the last events. He has not analyzed the data from these instruments as yet.

He also described the purposes of his study as being research in the area of earthquake prediction. He stated that he believes they predicted one of the January events.

Dr. Talwani mentioned that he had discussed the geology of the Lake Jocassee area with Dr. Hatcher of Clemson University and that Dr. Hatcher had stated that he does not know of any faults in that specific area.



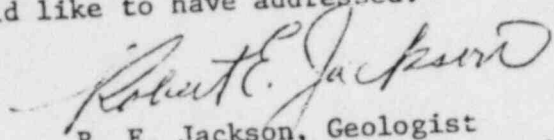
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FEB 11 1976

William P. Gammill

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On February 5, 1976, Gary Zech, Project Manager for Oconee 1, 2, 3 indicated that Duke Power would brief the staff with regard to these seismic events although they request that the staff specify those items that they would like to have addressed.



R. E. Jackson, Geologist
Geology and Seismology Branch
Division of Site Safety
and Environmental Analysis

Attachment:
January 15, 1976 memorandum

cc: H. Denton
G. Zech
R. Jackson
L. Hulman



Staff
Oconee

JAN 1 1976

William P. Gammill, Assistant Director
for Site Technology

THRU: J. C. Stepp, Chief, Geology and Seismology Branch *JK*

SEISMIC EVENT NEAR OCONEE PLANTS

On January 14, 1976 I had a telecon with Dr. Pradeep Talwani, a seismologist at the University of South Carolina. In the conversation he indicated that he was involved in monitoring some earthquakes in the vicinity of Lake Jocassee, South Carolina, approximately 15 miles north of Oconee 1, 2, 3 nuclear plant. The chronology of his involvement is as follows:

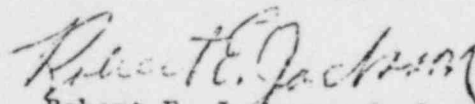
- Lake Jocassee began filling in 1973 and reached full head in March 1975. At that time an earthquake was felt by one individual near the dam.
- On October 1, 1975 a magnitude 3 earthquake was felt at the dam and Dr. Talwani states, "it shook up the people in the powerhouse." Two days after this event several small aftershocks were picked up with instruments.
- Other events were noted on November 6 and 7 and monitoring was undertaken for 10 days afterwards, a large number of aftershocks were recorded.
- On November 9, Law Engineering, consultants to Duke Power, set up instruments borrowed from Dr. Long and about this same time Dr. Talwani installed a six (6) station network in the area.
- On November 25, 1975, a magnitude 3.2 earthquake was recorded at Lake Jocassee. This event was felt over a large area. Dr. Talwani stated that in his analysis, the epicenters were progressing continually downward. Two hundred aftershocks were recorded. (As per a later conversation with B. Epps of Region II, Office of Inspection and Enforcement, this event tripped a seismic instrument located in the reactor tendon

dypa

gallery. These instruments were set to trip at .01g. One did trip and there has been some difficulty in getting the records analyzed due to closing of the company that supplied the instruments.)

- On December 8, two or three shocks were felt ranging from magnitude 2.5-2.7.
- Dr. Talwani also stated that there have been a number of other events of magnitude 2 or more.

In a later telecon with Bud Epps of Region II, Office of Inspection and Enforcement, he stated that he was aware of the early fall event, probably October 1, 1975 and the November 25 earthquake. The former was not felt at the plant, the latter was discussed earlier. He has received telephone communication on a number of occasions when earthquakes were noted at Lake Jocassee but only the November 25 shock caused the seismic instruments to be triggered.


Robert E. Jackson, Geologist
Geology and Seismology Branch
Division of Site Safety and
Environmental Analysis

cc: H. Denton
G. Zech
R. Jackson